
State of Repair

The state of repair of freeways, local roadways and transit affects travelers in two respects. The more obvious impact is on the quality of travel. The second impact relates to cost: Letting roadways and transit vehicles fall into disrepair often ends up costing more than it would have cost to perform routine maintenance, just as deferring maintenance on a house often results in a more expensive repair.

For freeways and local roadways, pavement condition is used as an indication of the state of repair. The condition of the transit system is measured by the number of times service is interrupted for repairs to vehicles or other systems such as tracks or power supply; these unscheduled repairs are known as service calls.

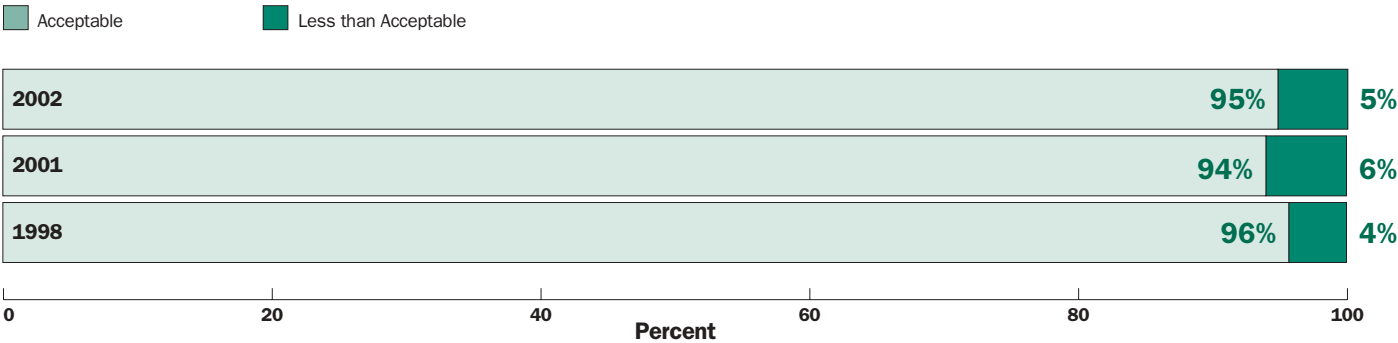
Freeway Pavement

Traffic Aside, Smooth Conditions Prevail on Bay Area Freeway Pavement

Heavy use of Bay Area freeways has a clear and immediate consequence in the form of increased congestion. One less obvious, somewhat longer-term consequence of heavy freeway use is increased wear and tear on the pavement surfaces themselves. Pavement conditions also are affected by weather, construction materials, maintenance history and age.

As the agency responsible for maintaining freeways and state highways in the region, Caltrans keeps close watch on what drivers experience when the rubber literally hits the road on Bay Area freeways. In its latest measurement, Caltrans found the ride quality on Bay Area freeways in 2002 to be acceptable (or better) on the vast majority (95 percent) of Bay Area freeway miles. This

Freeway Pavement Conditions (Ride Quality), 1998, 2001 and 2002



Source: Caltrans District 4

Data for 1999 and 2000 not available
Assessments based on the International Roughness Index

reading is remarkably consistent with other recent measurements of pavement conditions, as can be seen in the bar graph on page 40.

To assess freeway pavement condition, Caltrans deploys roving vehicles equipped with special devices that measure vibrations caused by the road surface. The difference between the vibrations measured on a given stretch of road and the level of vibration that would be experienced on an “ideal” or smooth road is expressed numerically using the International Roughness Index. (See note on page 57 for further discussion of International Roughness Index.)

In addition to measuring the condition of Bay Area freeways in terms of ride quality, Caltrans also monitors the actual physical condition of the pavement by observing and noting pavement distresses (e.g., cracking, etc.). Pavements with significant distresses can sometimes still provide acceptable ride quality, but over time the ride quality can be expected to decline if roadway surfaces are not adequately monitored and repaired as needed. State law requires Caltrans to develop a 10-year plan for rehabilitation and reconstruction of all state highways. The plan must be updated every two years, and is due to be updated at the end of 2003.

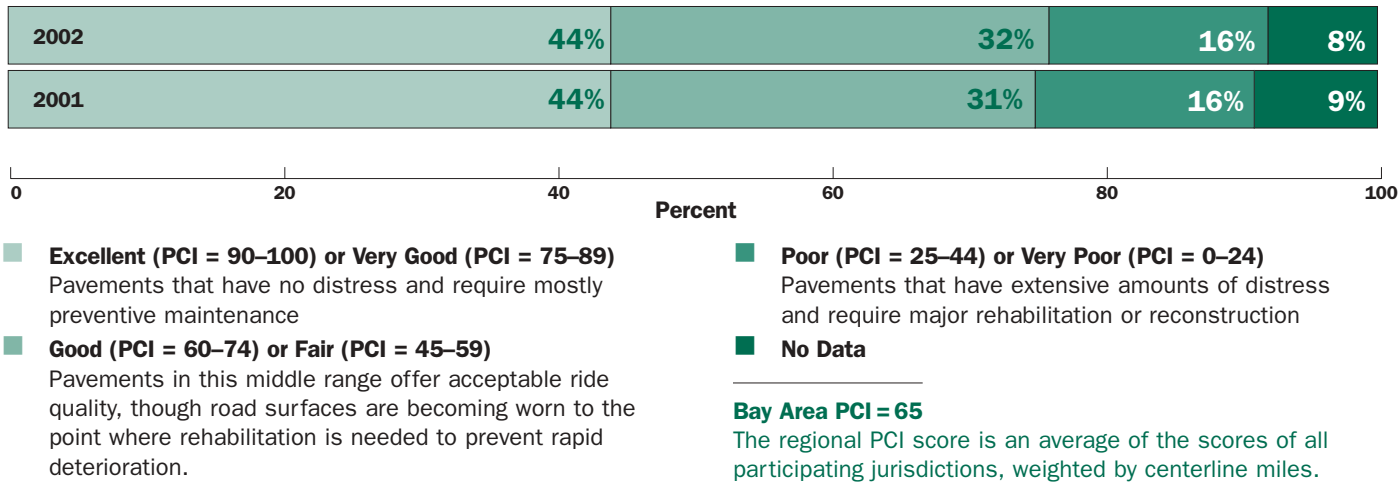
Bay Area Roads in “Good” Shape, But Significant Investments Lie Ahead to Avoid Pavement Deterioration

On average, the 19,000 miles of local streets and roads in the Bay Area were in much the same condition at the end of 2002 as they had been a year earlier. Measured against a “pavement condition index” (PCI) used by MTC’s Pavement Management System, the region’s local roadways scored a 65 out of a possible 100, a point lower than the average of 66 recorded in 2001. Of course, considering that roads have a lifespan of 25 to 40 years, year-to-year changes in pavement conditions — especially when averaged over such a large roadway network — tend not to be dramatic. And because it is an average, the region’s PCI score masks a considerable amount of variation in pavement conditions on individual roads and from jurisdiction to jurisdiction.

Of all local roads, 44 percent were found to be in very good or excellent condition with only minor or no distresses (see bar chart). Such roads require preventive maintenance only. Pavements in good or fair condition — 32 percent of local road mileage, up a percentage point from 2001 — require some rehabilitation but are still drivable. The 16 percent of local roadways found to be in poor or very poor condition are in need of extensive rehabilitation or reconstruction. Pavements in this category may be difficult to drive on and may be riddled with potholes.

In contrast to the direct measure of ride quality used by Caltrans to assess freeway pavement condition (see pages 40-41), the MTC Pavement Management System used

Pavement Conditions for Local Roadways, 2001 and 2002 (total pavement miles)



Source: Metropolitan Transportation Commission

93 cities and nine counties reporting

PCI = pavement condition index, a measure of pavement distress

55 of 102 jurisdictions provided updated databases to MTC for 2002. For other jurisdictions, MTC used its pavement management system software to project 2002 conditions based on the latest data available. (See note on page 57.)

by most Bay Area jurisdictions measures visible pavement distresses, such as cracking or patching.

While the average PCI rating of 65 falls into the “good” category, it is at the low end of the range. And because approximately 75 percent of a pavement’s serviceable life has been expended by the time its PCI rating falls to 60, the region’s average score suggests that a significant portion of the Bay Area’s local roadway network is due for major rehabilitative work, which will require a sizable future investment.

At present, the Bay Area as a whole is not meeting the level of expenditure required to maintain the condition of its pavement over time. Indeed, tight budgets have forced many jurisdictions into a “worst first” approach, in which only the streets in dire need are repaired and preventive

maintenance is not funded. In the long run, this triage-like practice is expensive, since it costs approximately five times as much to rehabilitate or reconstruct deteriorated pavement as it does to keep roads in better condition through routine maintenance.

MTC estimates a current, cumulative maintenance backlog of \$2.9 billion for local road repairs. This figure represents the cost of upgrading pavement in the region to the point where it is cost-effective to maintain. For most roads, this is a PCI between 75 and 85.

Shown below is a list of the Bay Area jurisdictions with the best and worst pavement conditions, based on the most recent survey data. A complete listing of all 102 jurisdictions (out of 109 in the region) for which data is available may be found in Appendix D.

A Closer Look – The Bay Area jurisdictions with the best and worst average pavement conditions are shown below. Often a jurisdiction’s low average pavement condition rating is the result of a roadway maintenance budget that is insufficient to cover a backlog of needs.

Bay Area Jurisdictions With Best and Worst Pavement Conditions, 2002

Best	2002 PCI ¹ (out of 100)	Worst	2002 PCI (out of 100)
1. City of Santa Clara	86	93. San Mateo Sausalito	56 56
2. Brentwood	85	95. Marin County (<i>unincorporated</i>)	54
3. Los Altos	84	96. Monte Sereno Richmond	53 53
4. Contra Costa County (<i>unincorporated</i>)	83	98. El Cerrito	52
5. Foster City	82	100. Sonoma County (<i>unincorporated</i>)	50
Oakley	82	101. City of Napa	49
Sunnyvale	82	102. Half Moon Bay Petaluma	48 48
8. Vacaville	81		
Fairfield	81		
10. Campbell	80		

Source: Metropolitan Transportation Commission

102 of 109 jurisdictions reporting

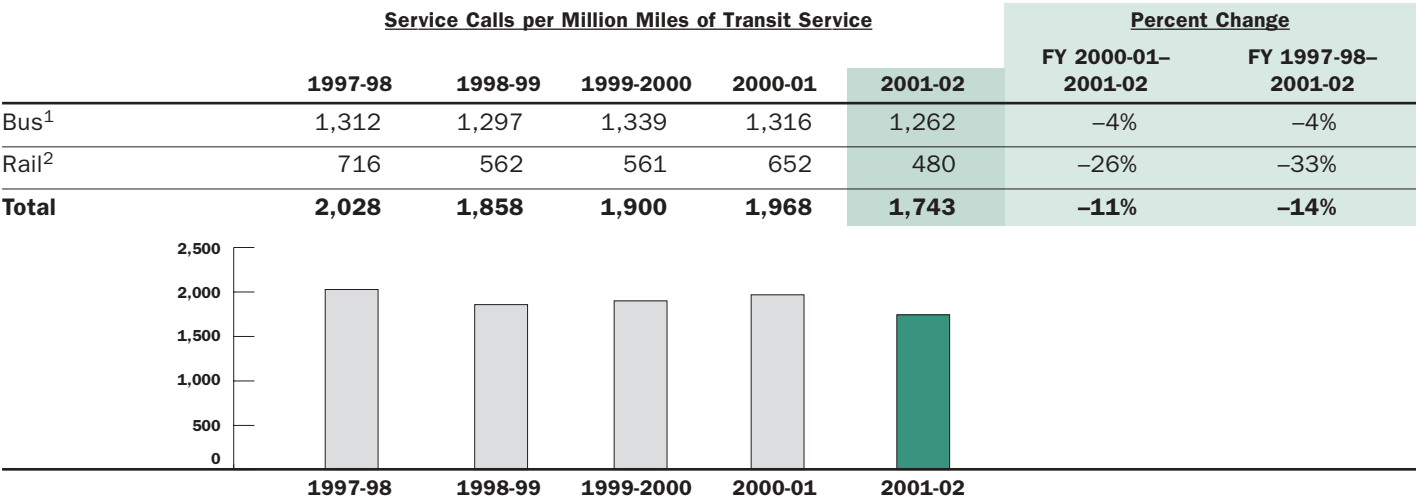
¹ PCI = pavement condition index; PCI of 100 = Excellent

Emergency Transit Repairs Dip in 2001-02 as Railcar Reliability Improves

The region’s transit rolling stock improved its reliability record in 2002, led by a sharp dip in the rate at which railcars required emergency maintenance service calls. According to statistics compiled by the Federal Transit Administration, the Bay Area’s seven largest bus and rail operators responded to calls for service 1,743 times for every million miles of service provided in fiscal year 2001-02, a decrease of 11 percent from the prior year. The rate of railcar service calls dropped by more than a quarter, declining 26 percent to 480 per million miles of service. Bus-related service calls also declined, but at a more modest 4 percent clip.

Longer term, the improvement in the service-call rate is even more marked, with service calls overall declining by 14 percent since 1997-98 levels. Railcar service call rates are down by a third over this period. The improving service-call picture can be traced in part to regional-level funding decisions on the part of MTC that give a high priority to the replacement and rehabilitation of worn-out rail vehicles and buses. (The service-call rate tends to be correlated with both the maintenance practices of individual transit operators and the age of the equipment in their fleets.) During the period presented here, Muni replaced most of its old light-rail vehicles (which had been experi-

Service Calls — Seven Largest Bay Area Transit Operators, Fiscal Years 1997-98–2001-02



Source: Federal Transit Administration

¹Includes AC Transit, SamTrans, Muni, Valley Transportation Authority (VTA), Golden Gate Transit

²Includes Caltrain, BART, Muni light rail, VTA light rail

encing reliability problems) while simultaneously taking steps to improve its preventive maintenance program. Likewise, BART has revised its trouble-shooting procedures, and is also beginning to reap the reliability benefits of its rehabilitated fleet of railcars. For their part, Golden Gate Transit and AC Transit have replaced a substantial number of buses.

The number of service calls per million miles of service provided is a good general indicator of the condition of the transit system. A service call is defined as any time service is interrupted in order to repair a vehicle or other key facet of the transit system, such as a switching device or power supply for a rail line. Like private automobiles, transit vehicles and systems tend to need more frequent repairs as they age.